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Fig. 1 is a perspective view of a bottle 10. The bottle has a main body 12 and a neck 14. A cap 11 is shown on the neck. A component 21 is shown separately, which appears to be a part of the cap or a separate piece. It has a base 22 and a top 24. A dashed line 26 indicates a hidden part of the component. A dashed line 28 indicates a hidden part of the bottle neck.

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SHIELD FOR BOTTLE AND METHOD

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FIELD OF THE INVENTION

10 The present invention relates to shielding water bottles of the type normally three to five gallons capacity which are placed in inverted fashion over a water dispenser in offices, factories, homes, restaurants, and other locations.

BACKGROUND OF THE INVENTION

15 The subject water bottles are normally prized by the manufacturers based upon the cleanliness and purity of the water which they contain. After the bottle is filled, a cap is applied to it, and the contents sanitarily sealed.

20 Totally overlooked by the industry and, indeed, the consumer, is the storage location and transportation of the bottles after they leave the sanitary cocoon of the manufacturing facilities. Many time the bottles are shipped in open trucks, palletized, and even stored, outside. When stored outside, of course, they are subject to whatever particulate contaminants are in the air including bugs, bird droppings, road dust, industrial contaminants, and a whole host of unimaginable undesirables.

25 Moreover, when the bottles are stored they invariably are stored with the cap up. The area below the cap and the shoulder are the very areas which, when the bottle is inverted for use in the water dispenser, come in contact with the upper cup of the dispenser and its insides. As a result, the contamination which befalls the bottle after it leaves the sanitary bottling works is all on the very area which is exposed to the dispenser and its cup and dispenses directly into the stream for the unwitting user. The contaminants can be loosened by the handling while inverted, and indeed, if the bottle is dropped in inverted fashion into the dispenser the impact will serve to dislodge even more of the contamination. Even the contamination which is encapsulated between the shoulder of the bottle and the cup of the dispenser while dispensing one bottle, may
30 be loosened before the second, third, or fourth bottle is inserted into the dispenser, and thus
35 assuring even more contamination of the contents of the solution. Moreover, a full water bottle,

once inverted, splashes water within the dispenser reservoir, further increasing the risk of flushing contaminants into the fresh water stream.

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SUMMARY OF THE INVENTION

The present invention stems from the discovery that a disposal sleeve or shield can be applied to a water bottle before leaving the filling source, heat-shrunk or otherwise caused to take the configuration of the upper portion of the bottle including the cap, and shoulder, and anchor the same to the bottle. Optionally the cover which has a neck, shoulder, and body portion to conform to the bottle can be provided with a removal tab upper portion. Important to the invention, however, is the securing of the sleeve to the bottle in an intimate skin-to-skin relationship which thereby shields the upper portion of the bottle from contamination wherever it may be prior to use. Because the heat-shrink occurs at elevated temperatures of 350°F or more, bacteria are killed in the process. The method of the invention resides in heat-shrinking or other wise securing a protective sleeve over the top of a water bottle. This is accomplished by forming a tube of a diameter larger than the bottle, cutting and forming the sleeve, positioning over the bottle neck and shoulder, and then heat-shrinking at a temperature exceeding that of boiling water. Thereafter, in accordance with the method, the sleeve is removed prior to emptying the bottle, the bottle then uncapped, and then secured to the cooler. The body of the sleeve is desirably removed before the bottle cap is removed. What is important, however, is to physically observe the removal of the sleeve to the end that the contamination which may have adhered to the outer portion of the sleeve is discarded rather than being permitted to engage any portion of the water bottle or the dispenser.

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In view of the foregoing, it is a principal object of the present invention to provide a sanitary protective sleeve to the upper portion of a water bottle which shields the same from contamination while being transported and stored.

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A related object of the present invention is to provide such a sanitary sleeve for a water bottle which is not only easily applied to the bottle, firmly attached to the bottle, but also easily removable at the site of installation of the bottle to the dispenser.

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Another important object of the invention is to achieve and extend the sanitary processing of the water in the bottle by applying a sleeve to the upper portion of the bottle which, because it is heat-shrunk onto the bottle at a temperature exceed 350°F, will further ensure the

inhibition of residual bacterial activity on the exterior portion of the bottle adjacent the area from which the water will be dispensed. A correlative advantage results from using an air impervious material to thereby kill any aerobic bacteria, or alternatively inhibit the passage of same to the inner face between the sleeve and the bottle itself.

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A further important object of the present invention is to provide a sanitary upper sleeve for a water bottle which is relatively inexpensive compared to the total cost of the bottle and susceptible of alternative constructions and applications to the bottle.

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BRIEF DESCRIPTION OF THE ILLUSTRATIVE DRAWINGS

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Further objects and advantages of the present invention will become apparent as the following description of an illustrative embodiment proceeds, taken in conjunction with the accompanying drawings, in which:

FIG. 1 is a perspective view of a typical three to five gallon water bottle for use on a dispenser;

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FIG. 2 is an exploded perspective view of the bottle, bottle cap, and importantly the sanitary sleeve of the subject invention;

FIG. 3 is a vertical transverse section, in enlarged scale, taken along section line 3-3 of FIG. 1;

FIG. 4 is a front elevation of the sanitary sleeve;

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FIG. 5 is a transverse vertical sectional view of the sleeve shown in FIG. 4 taken along section line 5-5 of FIG. 4;

FIG. 6 discloses an alternative embodiment of the cover illustrating a tab for removing the same;

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FIG. 7 shows the removal of the sanitary cover without a tear tab or line of weakness by pulling it off of a top of a bottle, much in the same fashion as one would remove a sock; and

FIG. 8 is yet another alternative embodiment showing lifting the sanitary sleeve off utilizing an optional tear tab and also an optional line of weakness;

FIG. 9 is a diagrammatic view of a tube being fed onto a conveyor line for subsequent forming into the sleeve for the bottle;

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FIG. 10 is a sequential view from FIG. 9, showing how the sleeve is cut to remove a portion leaving the blank remaining for placing over the bottle;

FIG. 11 is yet a sequential view showing the sleeve over the bottle loose fittingly engaging the same; and

FIG. 12 is a final diagrammatic view of the bottle being passed through a heat chamber which will cause the sleeve, at an elevated temperature of 350°F desirably, to shrink itself onto the bottle and at the same time sterilize from bacteria and subsequently shield against the growth of aerobic bacteria which may be trapped between the sleeve and the bottle.

DESCRIPTION OF A PREFERRED EMBODIMENT

The invention is best described in its environment of a water bottle 10, such as shown in FIG. 1. The bottle invariably has a cap 11 which is press fitted to the bottle neck 12. Beneath the neck 12 is a shoulder 14 followed by a barrel-shaped bottle body portion having a plurality of ribs such as ribs 15 and 16. The upper rib 15 becomes the important part of the anchor for the sanitary sleeve 20 of the present invention. The bottle bottom 18 is at the opposite end of the application of the sanitary sleeve. Normally the bottle is provided with a tab 19 on the cap 11 for the removal of the bottle cap. The sequential relationship between the bottle 10, the bottle cap 11, and the sanitary sleeve 20 is shown in FIG. 2.

Turning now to FIG. 3, in enlarged detail it will be seen that the sleeve 20 has been secured over the upper portion of the bottle 10 to follow the contour of the cap 11, the neck 12, the shoulder 14 and to engage itself in a skirt-like gripping relationship to the upper rib 15 of the bottle 10.

As shown in FIG. 4, the sleeve 20 has a top portion 21 and a bottom portion 22 with a bell-shaped seam 24 joining two opposed sheets of material as shown in FIG. 5 defining an interior portion 29. The front 26 and rear 28 are shown in FIG. 5.

In FIG. 6 there is a showing of the sleeve 20 with a tear-line 30, and an optional tab 31 thus defining a removable cover 32 as shown in FIG. 8. Particularly as shown in FIG. 7, it will be appreciated that desirably the lower portion may be removed before the upper portion of the sleeve to thereby isolate the bulk of the contaminants from the bottle top before the bottle cap 11 is removed. As shown in FIG. 7, the simplest approach to the removal of the sanitary sleeve 20 is to grasp it at the bottom edge 22, and remove the same from the upper portion of the bottle in much the same fashion as removing a sock from the foot. FIG. 8 shows yet another

alternative embodiment in which optionally either a tab 31 is provided at the upper portion of the sleeve 20, or a line of weakness 30 is provided along a vertical edge. In either event, the thrust of the invention is directed to totally encapsulating the upper portion of the bottle 10 with a removable sleeve 20, with variations as to how the same is applied and as to how the same is removed

The material employed for the sanitary sleeve 20 is desirably heat-shrinkable, compatible with food and drug regulations, tough and durable to withstand the type of handling that the water bottle 10 will have. Such a material is exemplified by the DuPont product known as Clysar which is a shrink package film. It is available in gages 60, 75, 100, 125 and 150, either flat or folded. More specifically, it is described as strong, clear, biaxially oriented, heat-shrinkable, and comprised of a linear low density polyolefin film. The product can be obtained from the DuPont packaging group at 1007 Market Street, Wilmington, Delaware 19898.

Plastics recommended for use are the following:

- 1) Rigid Plastics can be:
 - a. extruded
 - b. molded
 - c. vacuum-formed.
- 2) Semi-Rigid Plastics can be:
 - a. wax or wax based products
 - b. spray base application.
- 3) Flexible Plastics can be:
 - a. stretch - saran factor
 - b. elastic - latex
 - c. heat-shrink - polyolefin, PVC film of 1 mil. (.025 gauge), LD & HD polyethylene other latex, petroleum, polymer, resin, natural, organic or synthetic based materials commonly referred to as "plastics".

The dwell time in the heat-shrink area is 3-5 seconds at 350-400°F.

Exemplary of the bottles are the Reid "Aqua-Lite" round water bottles. They come primarily in three and five gallon capacities. More particularly, they have protruding ribs encircling the body portion such as rib 15, as shown in FIG. 7. Alternatively, the rib 15 may be concavely formed in the bottle. In either event, the important aspect of use is to heat-shrink the lower edge 22 of the sanitary sleeve 20 onto the bottle 10.

The method of the invention contemplates primarily developing a sleeve 20 for encapsulating the upper portion of a water bottle 10 which is proportioned so that its lower edge overlaps the first rib 15 of the bottle. After the sleeve 20 is placed over the bottle, it is heat-shrunk or otherwise shrunk to conform in a skin-tight relationship to the bottle essentially as shown in FIGS. 3 and 6. Thereafter, the method contemplates the step of removing the sleeve cover and the sleeve body portion from the bottle prior to inverting the bottle over the dispenser where employed. Desirably, the sleeve 20 should be wiped with a damp cloth or other cleansing technique prior to being removed to thereby further ensure that the handler of the bottle does not indulge in cross-contamination.

In more specific detail the method contemplates the use of a pair of opposed sheets of DuPont Clysar, or alternatively a tube 35, the diameter of which exceeds the bottle 10, a distance sufficient to permit the same to be shaped into a circular form and dropped over the bottle, such as shown in FIG. 9. Thereafter, as shown in FIG. 10, the tubular form is cut at its upper corners in order to develop a smaller area to pass over the neck and the cap of the bottle.

As shown in FIG. 11, the sleeve is then dropped over the bottle totally surrounding the same and dropping below the shoulder portion of the bottle, with the neck of the sleeve resting atop the bottle cap. Thereafter, as shown in FIG. 12, the bottle is passed into a heat tunnel 40 desirably held at a temperature of 350°F. At this time, optionally blowers are provided to heat the sleeve portion to a temperature elevated from that of the ambient in the tunnel. The curing time for the material to shrink into a skin-type relationship is approximately 3-5 seconds. This dwell time does not significantly increase the temperature of the contents of the bottle, but is rather concentrated on the sleeve to promote its shrinkage. Optionally, ultra-violet and/or infrared may be applied to the material, depending upon its characteristics and shrink promoting properties. Once the bottle is removed from the heating area, it is then passed on in traditional fashion for transport to the customer.

Alternatives of the method are contemplated, but basic to the method is heat-shrinking the sleeve into place for the insurance of a skin-tight fit, and the application of a temperature which will enhance the sterile relationship between the inside of the sleeve and the upper portion of the bottle. An alternative includes the preforming of the sleeve by a hot knife application to two sheets of the material. In addition, a tubular form of the material can be heated at the upper area and stretched which thereby reduces the neck portion for conformance to the neck of the bottle.

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Alternatives are also contemplated including an under-sized sleeve 20 which is expanded with pure or inert air or otherwise expanded prior to pulling over the bottle 10 and then conforming to the shape of the bottle as the opening force is relaxed.

5 It will be understood that various changes in the details, materials and arrangements of parts which have been herein described and illustrated in order to explain the nature of the invention, may be made by those skilled in the art within the principle and scope of the invention as expressed in the appended claims.

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WHAT IS CLAIMED IS:

- 1 1. A sleeve for use with a water bottle, which water bottle has a cap, a neck,
2 a shoulder, a plurality of ribs beneath the shoulder portion, and a bottle with a generally cylindrical
3 body,
4 - said sleeve having a body with a top neck portion, shoulder portion and cap
5 portion, and a shoulder covering portion, conforming to the exterior configuration of the bottle,
6 - said sleeve being heat-shrinkingly secured to the bottle in skin-tight
7 relationship to cover the shoulder of the upper portion of the bottle which is exposed to
8 contamination anchored in place by engaging at least one cylindrical body rib.

- 1 2. In the sanitary sleeve covering for a water bottle of Claim 1,
2 - said sleeve being shrunk at its lower extremity to conform to the upper rib
3 of the bottle with a temperature exceeding that of boiling water to kill numerous bacteria.

- 1 3. In the sleeve of Claim 1,
2 - a line of weakness from bottom to top along the cover to assist in removing
3 the neck, shoulder and skirt portion of the sleeve from the bottle prior to usage.

- 1 4. In the sleeve of Claim 1,
2 - a tab positioned atop the cap portion of the cover portion of the sleeve and
3 the removable portion.

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1 5. A method for securing the sanitary transportation, storage, or installation
2 of a water bottle having a cap, a neck, a generally cylindrical body, and a shoulder portion
3 transitioning from the body portion to the neck portion, comprising the steps of,

4 - providing a sleeve having a bell-shaped body portion proportioned to overlie
5 the shoulder of the bottle body and extend to where the shoulder joins the body of the bottle, and
6 a neck and top portion which generally conform to the silhouette of the bottle to be secured,

7 - overlying said sleeve on the bottle after the bottle has been filled,

8 - conforming said sleeve by heat-shrinking at over 350°F to a skin-tight
9 aerobic relationship to said bottle, and

10 - removing the skin from the bottle at the use site to thereby remove
11 undesirable contaminants which have become attached to the protective sleeve while the bottle
12 is being transported, stored, or otherwise handled prior to installation.

1 6. In the method of Claim 5,

2 - proportioning the sleeve to engage a circumferential rib of the bottle.

1 7. A sanitary sleeve for use in covering a water bottle after the same has been
2 filled, which water bottle has a cap, a neck, a shoulder, and a body portion, said body portion
3 being generally cylindrical,

4 - said sleeve having a bottle engaging shoulder, top neck and cap portion
5 conforming to the exterior configuration of the bottle, and covering the shoulder of the bottle,

6 - said sleeve being secured to the bottle in skin tight relationship to cover the
7 neck, shoulder, cap portion of the bottle which is exposed to contamination.

1 8. In the sanitary sleeve for use in covering a water bottle of Claim 7,

2 - said sleeve being proportioned to shrink throughout its configuration to
3 conform to the bottle shoulder.

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1 9. A method for securing the sanitary transportation and installation of a water
2 bottle comprising the steps of,
3 - providing a sleeve having a bell-shaped body portion and a neck , top and
4 shoulder portion which generally conform to the silhouette of the bottle to be secured,
5 - overlying said sleeve on the bottle after the bottle has been filled,
6 - conforming and proportioning said sleeve to a snug relationship to said
7 bottle neck and shoulder, and
8 - removing the skin from the bottle at the use site to thereby remove
9 undesirable contaminants which have become attached to the protective sleeve while the bottle
10 is being transported, stored, and otherwise handled prior to installation.

1 10. A water bottle and sanitary sleeve comprising, in combination;
2 - said water bottle having a body with a cap, neck, shoulder, substantially
3 cylindrical body portion, and a bottom;
4 - said sleeve having a body with a top neck portion, shoulder portion, cap
5 portion, and a shoulder covering portion, conforming to the exterior configuration of the bottle;
6 - said sleeve being secured to the bottle in skin-tight relationship to cover the
7 shoulder of the upper portion of the bottle which is exposed to contamination.

1 11. The bottle and sleeve according to Claim 10, comprising,
2 - said bottle having a rib portion beneath the shoulder portion,
3 - said sleeve at its lower portion being anchored in place by engaging said
4 bottle rib.

1 12. A heat-shrinkable sleeve for use with a water bottle, which water bottle has
2 a cap, a neck, a shoulder, and a plurality of ribs beneath the shoulder portion, as well as a bottle
3 with a general cylindrical body,
4 - said sleeve having a body with a top neck portion and shoulder portion and
5 cap portion and shoulder covering portion, conforming to the exterior configuration of the bottle,
6 - said sleeve being secured to the bottle by heat-shrinking at an elevated
7 temperature exceeding 212°F in skin-type relationship to cover the shoulder of the upper portion
8 of the body which is exposed to contamination, and anchored in place by engaging at least one
9 cylindrical body rib.

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1 13. A heat-shrinkable sleeve for use with a water bottle, which water bottle has
2 a cap, a neck, a shoulder, as well as a bottle with a general cylindrical body,
3 - said sleeve having a body with a top neck portion and shoulder portion and
4 cap portion and shoulder covering portion, conforming to the exterior configuration of the bottle,
5 - said sleeve being secured to the bottle in heat-shrink skin-tight relationship
6 to cover the shoulder of the upper portion of the bottle which is exposed to contamination when
7 bottle is transported from the filling facility to the place of utilization.

1 14. A method for securing the sanitary transportation, storage, or installation
2 of a water bottle having a cap, a neck, a generally cylindrical body, and a shoulder portion
3 transitioning from the body portion to the neck portion, comprising the steps of,
4 - providing a sleeve having a bell-shaped body portion proportioned to overlie
5 the shoulder of the bottle body and extend to where the shoulder joins the body of the bottle, and
6 a neck and top portion which generally conform to the silhouette of the bottle to be secured,
7 - overlying said sleeve on the bottle after the bottle has been filled,
8 - conforming said sleeve to a skin-tight relationship to said bottle by heat-
9 shrinking the same at a temperature exceeding 212°F, and
10 - removing the skin from the bottle at the use site to thereby remove
11 undesirable contaminants which have become attached to the protective sleeve while the bottle
12 is being transported, stored, or otherwise handled prior to installation.

1 15. In the method of Claim 14,
2 - selecting the material for forming said sleeve from one which is strong,
3 clear, biaxially oriented, heat-shrinkable, and comprised of a low linear density polyolefin film.

AMENDED CLAIMS

[received by the International Bureau on 25 May 2000 (25.05.00);
original claims 1 to 15 replaced by new claims 16 to 30 (4 pages)]

1 **16.** A sleeve for use in protecting an upper portion of a water bottle, said upper
2 portion of said water bottle comprising a cap, a neck, an upper portion shoulder, and said water
3 bottle further comprising a plurality of ribs beneath the upper portion and wherein said upper
4 portion, and particularly said upper portion shoulder, may be exposed to precipitate and other
5 contamination,

6 - said sleeve conforms to the exterior configuration of the upper portion of the
7 water bottle, said sleeve comprising a neck portion, shoulder portion, cap portion, and a shoulder
8 covering portion,

9 - said sleeve being heat-shrinkingly secured to the upper portion of the bottle
10 in skin-tight relationship so as to cover the upper portion shoulder of the bottle, and

11 - said sleeve being anchored in place by engaging at least one body rib
12 through peripheral gripping means.

1 **17.** In the sleeve of Claim 16,

2 - said sleeve being shrunk at its lower extremity to conform to an upper rib
3 of the bottle,
4 wherein said sleeve is shrunk by applying a temperature exceeding that of boiling water to kill
5 numerous bacteria.

1 **18.** In the sleeve of Claim 16,

2 - a line of weakness from a bottom edge to a top edge of the cover, said line
3 of weakness used to assist in removing the neck, shoulder and portions of the sleeve from the
4 water bottle prior to usage.

1 **19.** In the sleeve of Claim 16,

2 - a tab positioned atop the cap portion of the sleeve and adjacent to a tear
3 line.

1 **20.** A method for securing the sanitary transportation, storage, or installation
2 of a water bottle having a cap, a neck, a generally cylindrical body, and a shoulder portion
3 transitioning from the body portion to the neck portion, comprising the steps of,
4 - providing a sleeve having a bell-shaped body portion proportioned to overlie
5 the shoulder of the bottle body and extend to where the shoulder joins the body of the bottle, and
6 a neck and top portion which generally conform to the silhouette of the bottle to be secured,
7 - overlying said sleeve on the bottle after the bottle has been filled,
8 - conforming said sleeve by heat-shrinking at over 350°F to a skin-tight
9 aerobic relationship to said bottle, and
10 - removing the skin from the bottle at the use site to thereby remove
11 undesirable contaminants which have become attached to the protective sleeve while the bottle
12 is being transported, stored, or otherwise handled prior to installation.

1 **21.** In the method of Claim 20,
2 - proportioning the sleeve to engage a circumferential rib of the bottle.

1 **22.** A sanitary sleeve for use in covering the neck, shoulder, and cap portion of
2 a water bottle, wherein said neck, shoulder, and cap portions may be exposed to contamination,
3 and wherein said sanitary sleeve is placed upon said water bottle after said water bottle has been
4 filled,
5 - said sleeve having a plurality of portions, said plurality of portions comprising
6 a bottle engaging shoulder portion, a neck portion a cap portion, said plurality of portions all
7 conforming to the exterior configuration of the bottle, and some or all of said plurality of portions
8 covering the shoulder of the bottle,
9 - said sleeve being secured to the bottle in skin tight relationship to cover the
10 neck, shoulder, and the cap portion of the bottle through peripheral gripping means.

1 **23.** In the sanitary sleeve for use in covering a water bottle of Claim 22,
2 - said sleeve being proportioned to shrink throughout its configuration to
3 conform to the bottle shoulder.

1 **24.** A method for securing the sanitary transportation and installation of a water
2 bottle comprising the steps of,
3 - providing a sleeve having a bell-shaped body portion and a neck , top and
4 shoulder portion which generally conform to the silhouette of the bottle to be secured,
5 - overlying said sleeve on the bottle after the bottle has been filled,
6 - conforming and proportioning said sleeve to a snug relationship to said
7 bottle neck and shoulder, and
8 - removing the skin from the bottle at the use site to thereby remove
9 undesirable contaminants which have become attached to the protective sleeve while the bottle
10 is being transported, stored, and otherwise handled prior to installation.

1 **25.** A water bottle and sanitary sleeve combination comprising, in combination;
2 - said water bottle having a body with a cap, neck, shoulder, body portion, and
3 a bottom;
4 - said sleeve having a body with a neck portion, shoulder portion, cap portion,
5 and a shoulder covering portion, all conforming to the exterior configuration of the bottle;
6 - said sleeve being secured to the bottle in skin-tight relationship to cover the
7 shoulder of the upper portion of the bottle which may be exposed to contamination.

1 **26.** The bottle and sleeve according to Claim 25, comprising,
2 - said bottle having a rib portion beneath the shoulder portion,
3 - said sleeve at its lower portion being anchored in place by engaging an
4 indentation associated with said bottle rib through peripheral gripping means.

1 **27.** A heat-shrinkable sleeve for use in covering a water bottle, which water
2 bottle has a cap, a neck, a shoulder, and a plurality of ribs beneath the shoulder portion,
3 - said sleeve having a body with a neck portion, shoulder portion, cap portion
4 and shoulder covering portion, all conforming to the exterior configuration of the bottle,
5 - said sleeve being secured to the bottle by heat-shrinking at an elevated
6 temperature exceeding 212°F in skin-tight relationship to cover the shoulder of the upper portion
7 of the body of said bottle which is exposed to contamination, and anchored in place by peripheral
8 gripping means.

1 **28.** A heat-shrinkable sleeve for use with a water bottle, said water bottle having
2 a cap, a neck, a shoulder, as well as a bottle with a general body,

3 - said sleeve having a neck portion, shoulder portion, cap portion and
4 shoulder covering portion, all conforming to the exterior configuration of the bottle,

5 - said sleeve being secured to said bottle in heat-shrink skin-tight relationship
6 so as to cover the shoulder of the upper portion of the bottle which is exposed to contamination
7 when the bottle is transported from the filling facility to the place of utilization.

1 **29.** A method for securing the sanitary transportation, storage, or installation
2 of a water bottle having a cap, a neck, a generally cylindrical body, and a shoulder portion
3 transitioning from the body portion to the neck portion, comprising the steps of,

4 - providing a sleeve having a bell-shaped body portion proportioned to overlie
5 the shoulder of the bottle body and extend to where the shoulder joins the body of the bottle, and
6 a neck and top portion which generally conform to the silhouette of the bottle to be secured,

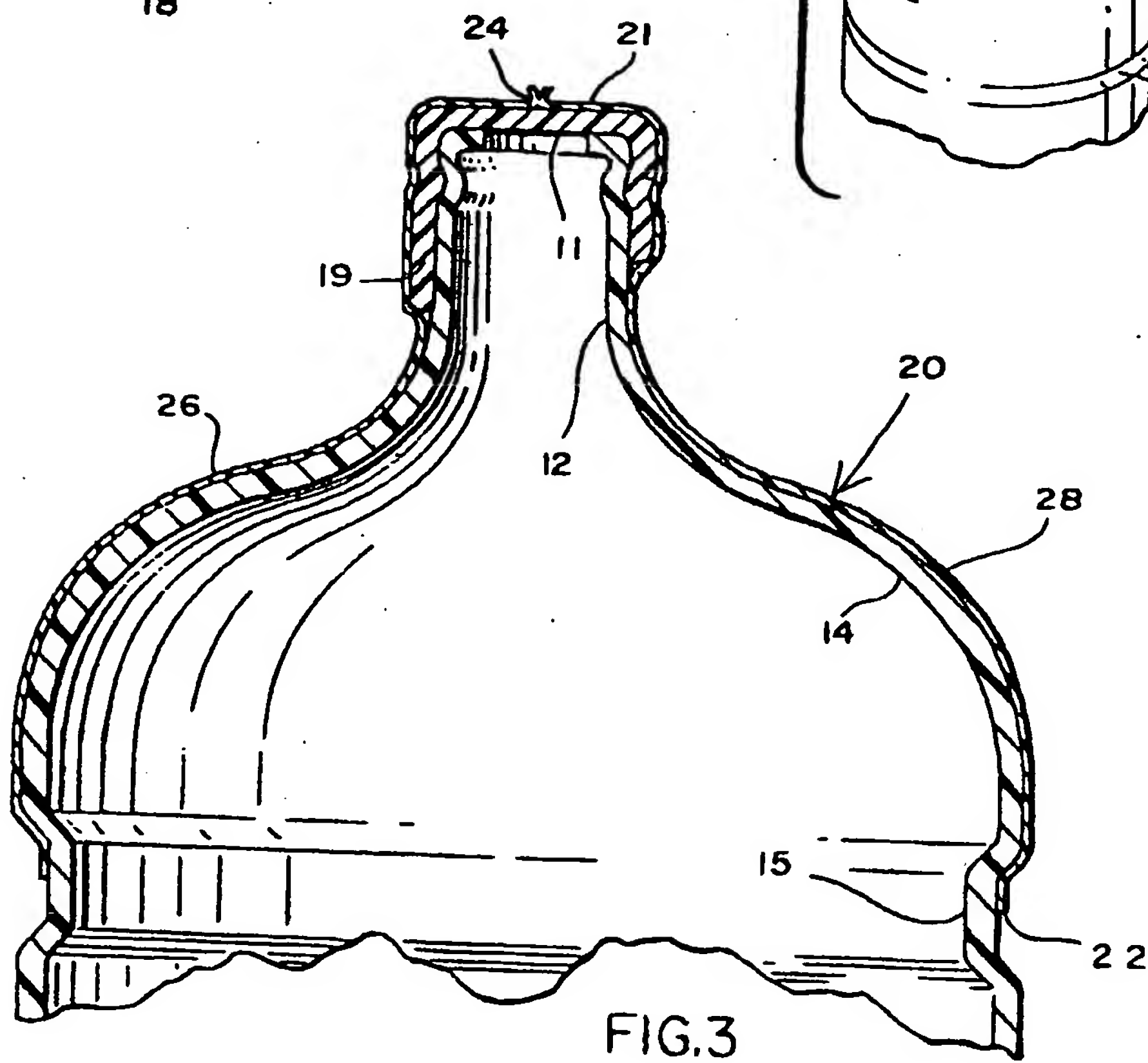
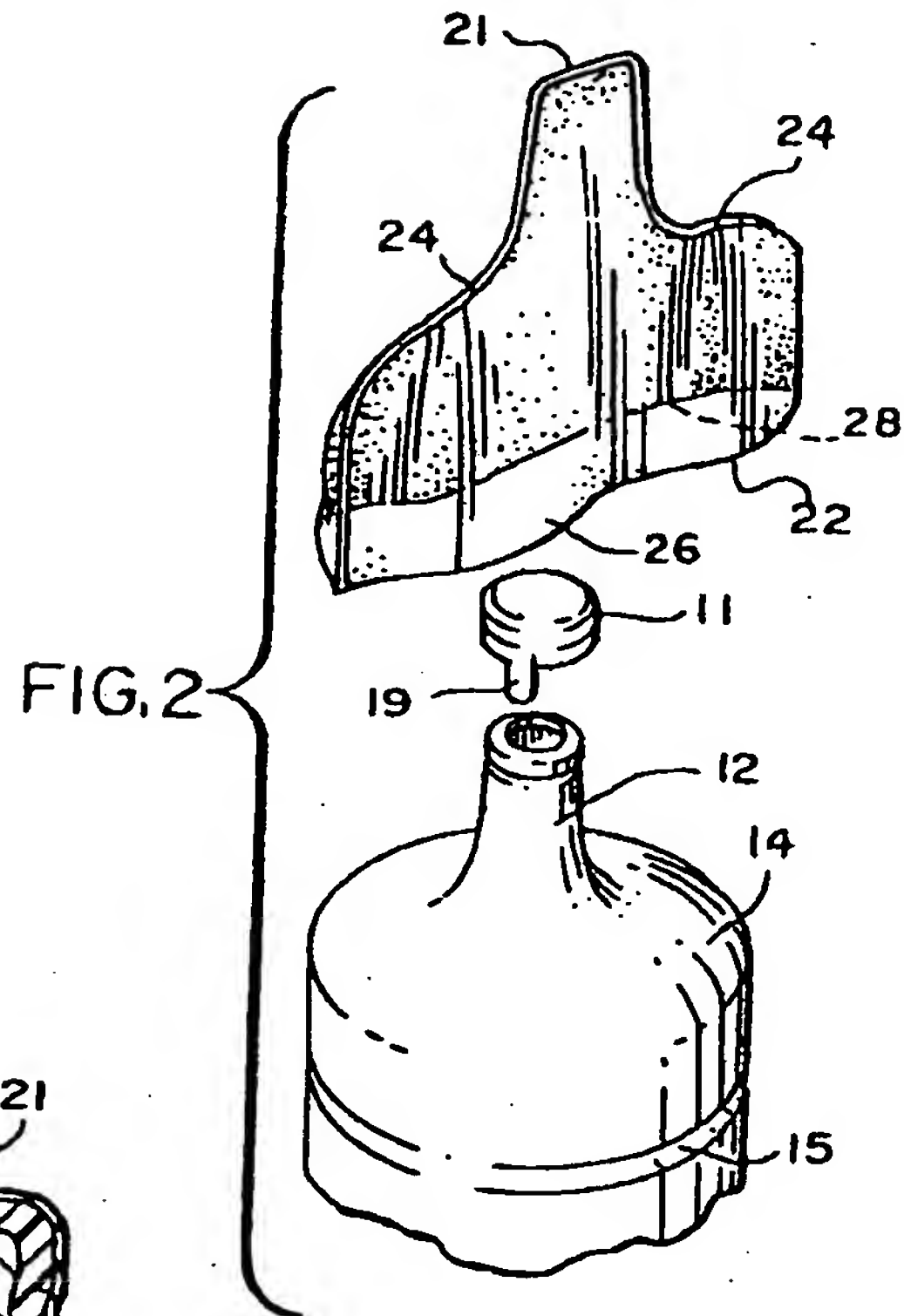
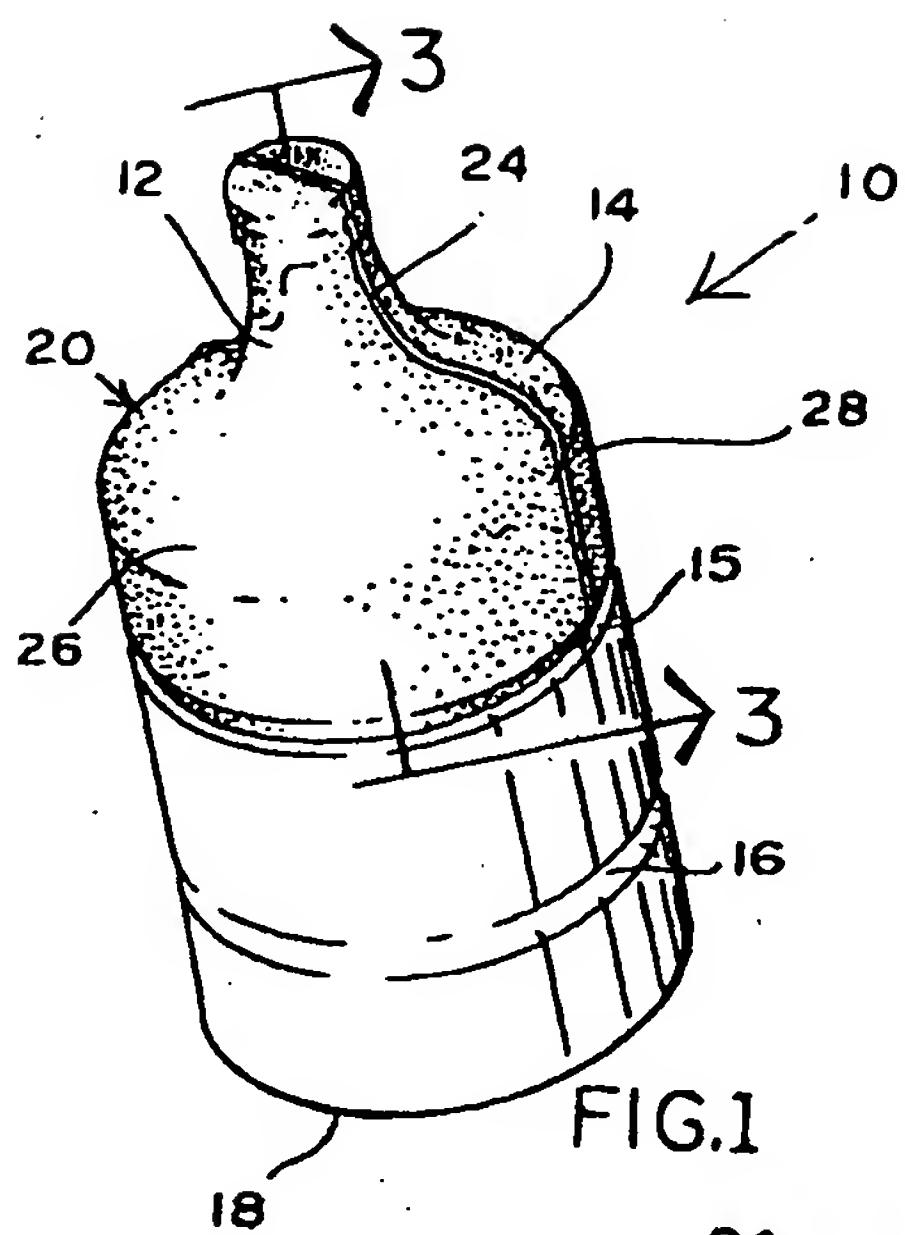
7 - overlying said sleeve on the bottle after the bottle has been filled,

8 - conforming said sleeve to a skin-tight relationship to said bottle by heat-
9 shrinking the same at a temperature exceeding 212°F, and

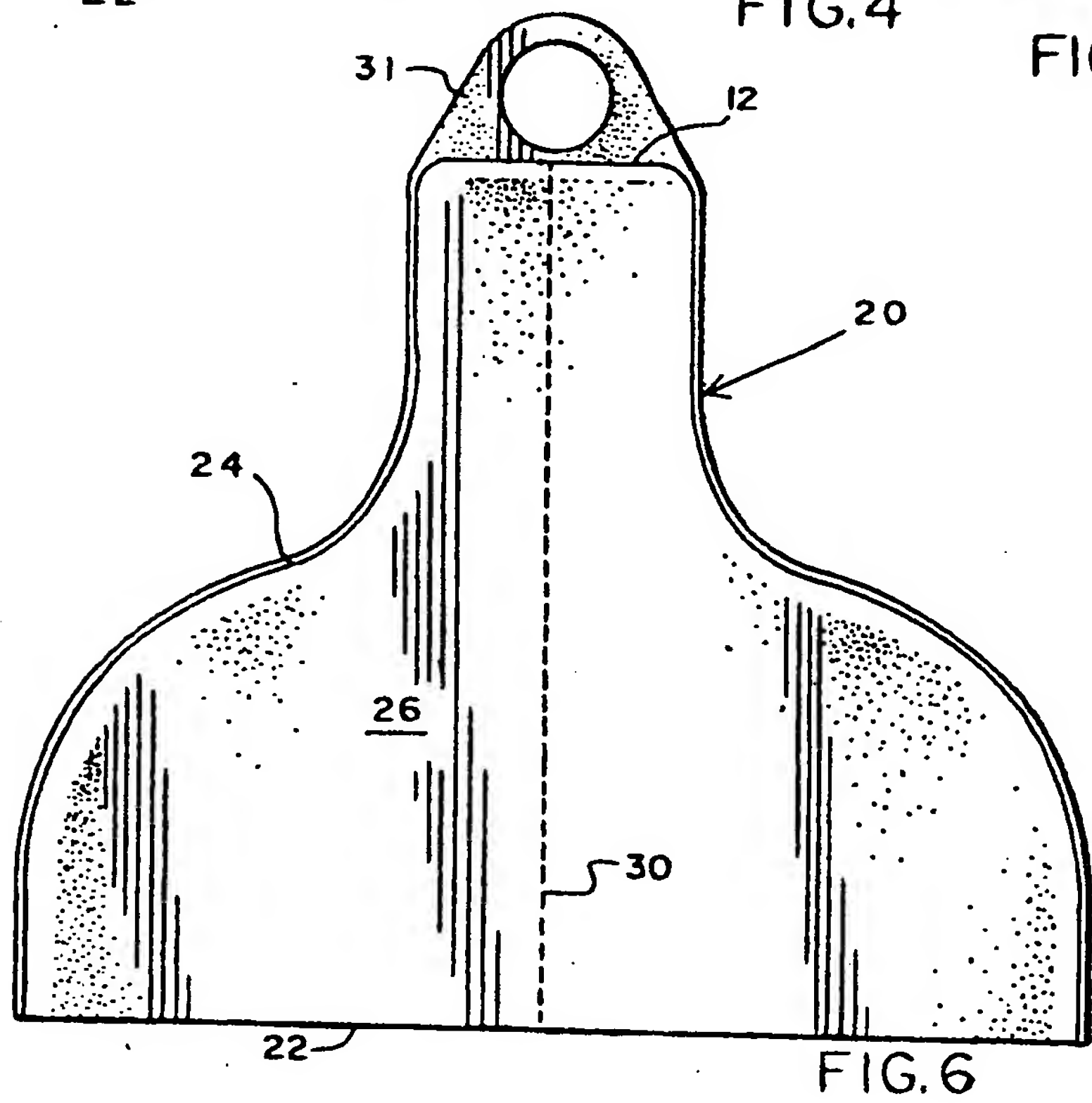
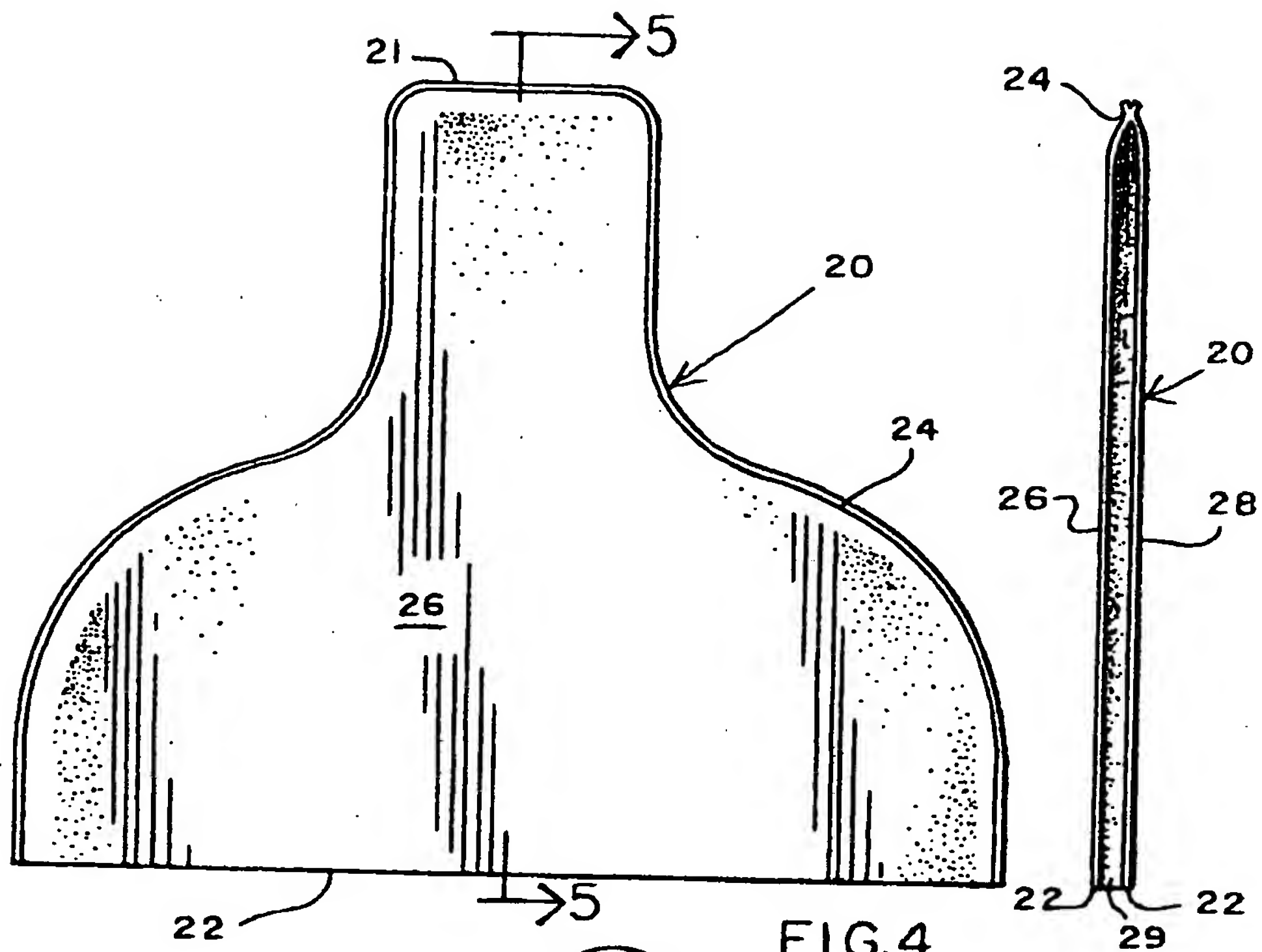
10 - removing the skin from the bottle at the use site to thereby remove
11 undesirable contaminants which have become attached to the protective sleeve while the bottle
12 is being transported, stored, or otherwise handled prior to installation.

1 **30.** In the method of Claim 29,

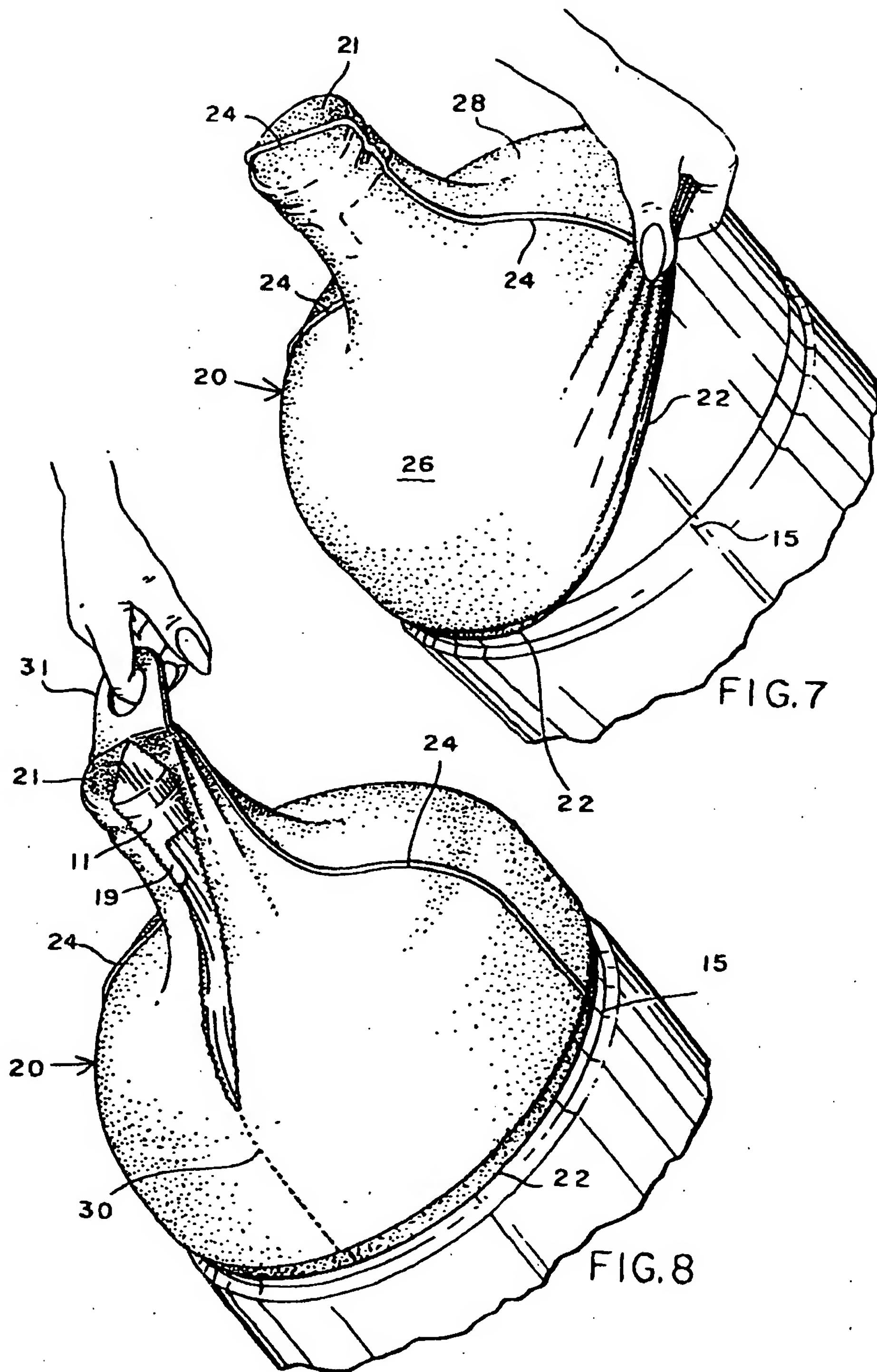
2 - selecting the material for forming said sleeve from one which is strong,
3 clear, biaxially oriented, heat-shrinkable, and comprised of a low linear density polyolefin film.



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3 / 4



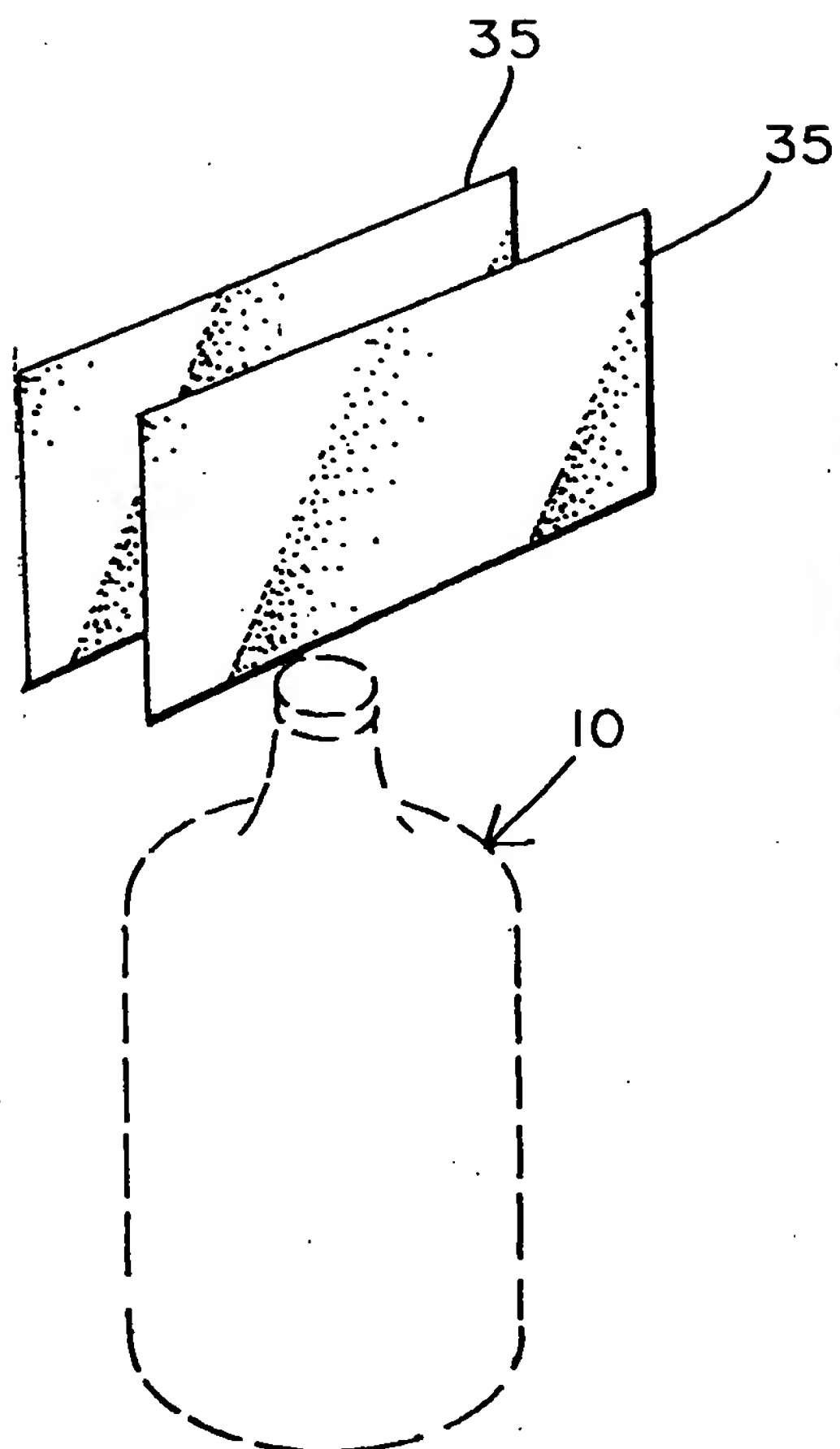


FIG. 9

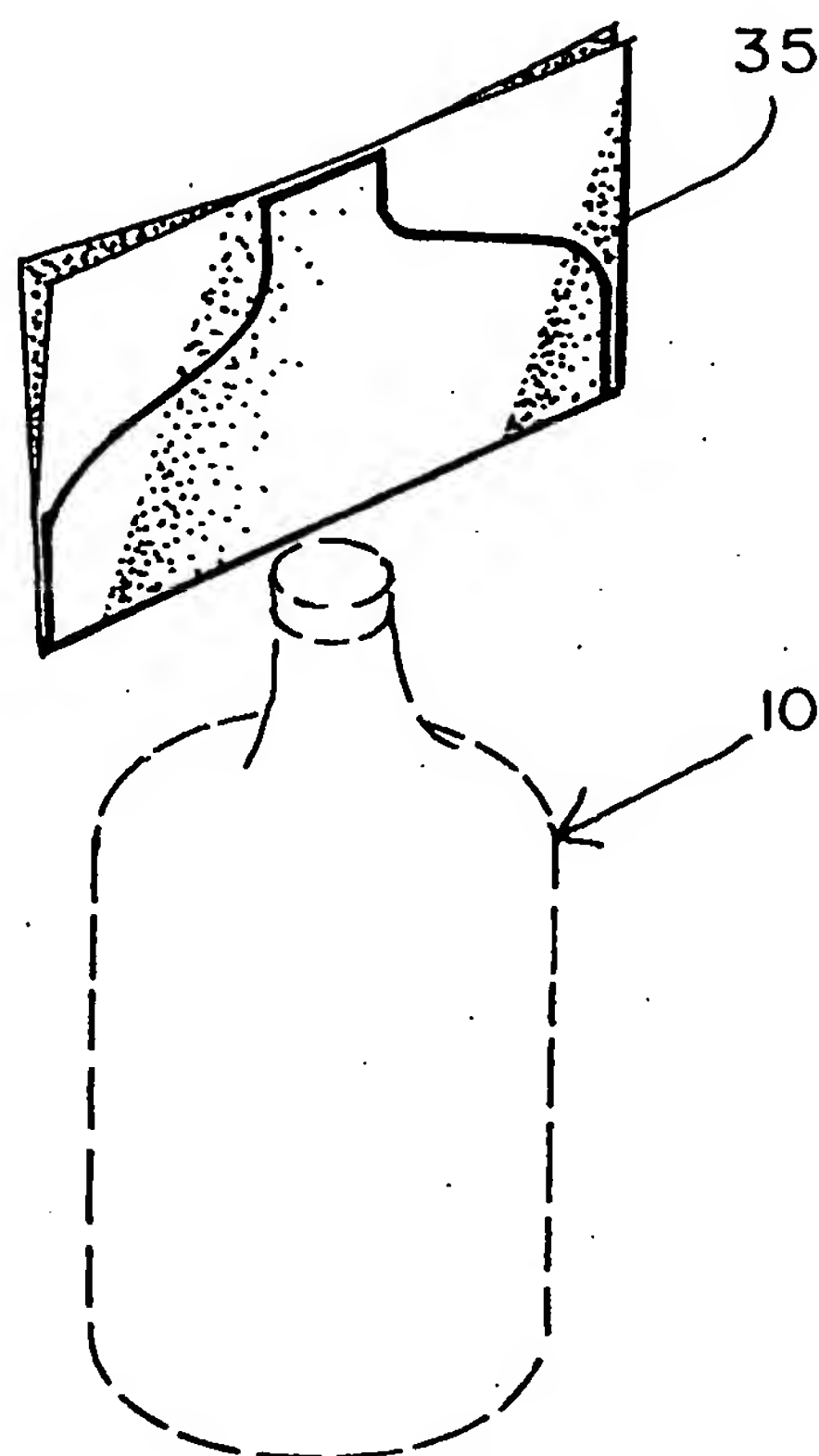


FIG. 10

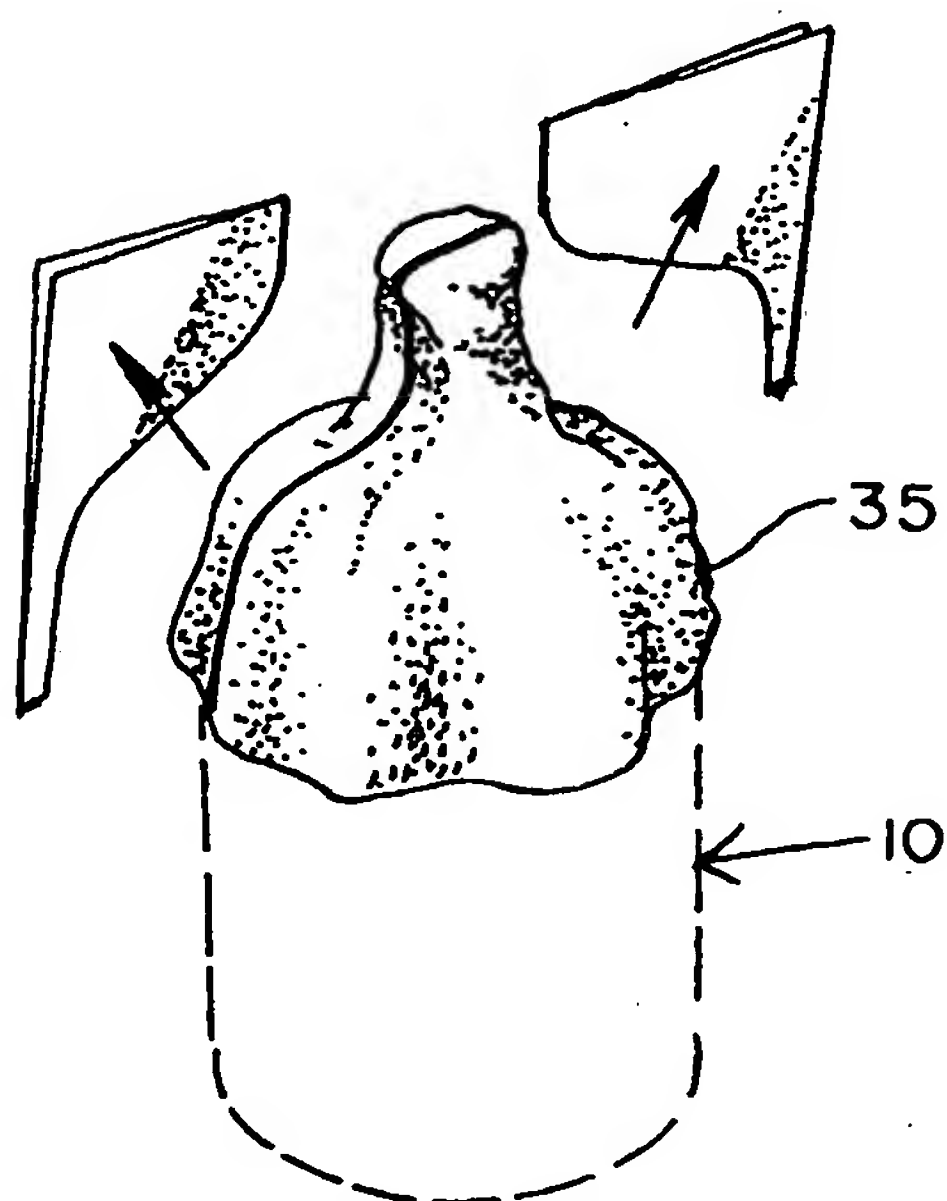


FIG. 11

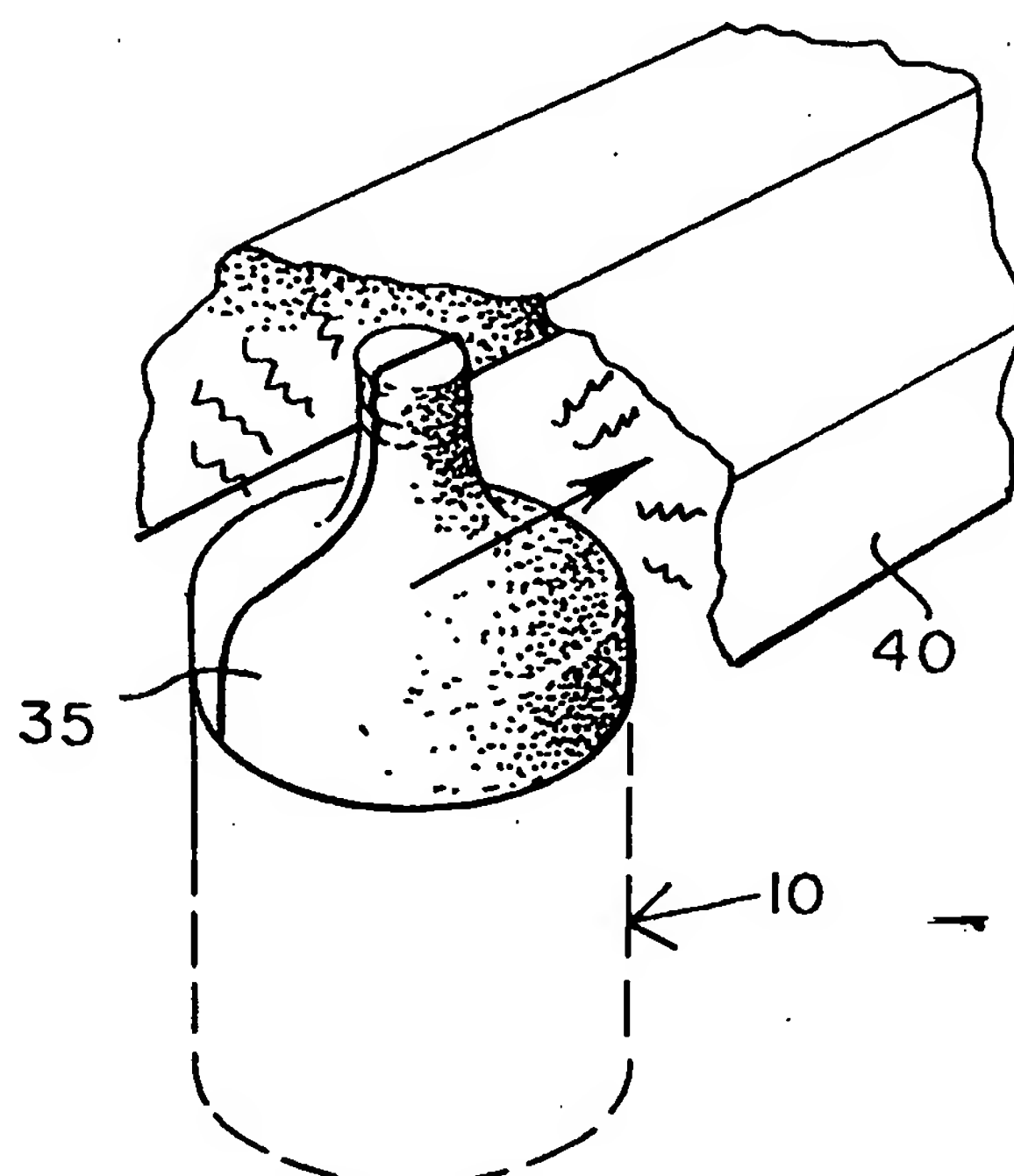


FIG. 12

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US99/31121

A. CLASSIFICATION OF SUBJECT MATTER

IPC(6) :B65D 41/34

US CL :215/246

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : Please See Extra Sheet.

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

West 1.2

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5,292,018 A (TRAVISANO) 08 March 1994, see entire document	1,3,13
Y		1,2,4,7,8,10,12
Y	US 4,177,905 A (WINCHELL et al.) 11 December 1979, see entire document.	4
Y	US 4,779,722 A (HALL) 25 October 1988, see entire document.	1,2,7,8, 10, 12
A	US 5,217,128 A (STENGER) 08 June 1993, see entire document.	ALL
A	US 4,957,210 A (KUSZ) 18 September 1990, see entire document.	ALL



Further documents are listed in the continuation of Box C.



See patent family annex.

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"O" document referring to an oral disclosure, use, exhibition or other means	
"P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search

03 MARCH 2000

Date of mailing of the international search report

04 APR 2000

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US99/31121

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5,524,782 (SALEMI) 11 June 1996, see entire document.	ALL
Y	US 3,827,591 A (SPELMAN et al.) 06 August 1974, see entire document.	5,6,9,14,15
A	US 3,967,995 A (FABIANIC) 06 July 1976, see figure 8.	5,6,9,14,15
A	US 4,555,025 A (WEINBERG et al.) 26 November 1985, see figure 2.	ALL
A	US 4,575,990 A (VON BISMARCK) 18 March 1986, see column 3, lines 8-13.	5,6,9,14,15
A	US 4,724,652 A (BIRKENFELD) 16 February 1988, see entire document.	5,6,9,14,15

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US99/31121

B. FIELDS SEARCHED

Minimum documentation searched

Classification System: U.S.

215/246,250,251,253,254,255,382,12.2,Dig 2; 220/265,266,270,669,592.18; 206/497; 428/34.4; 229/160.2;
383/205,209; 53/442,557,585

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